Joint Warfare System (JWARS)

Update to the

Executive Forum on Modeling and Simulation

May 30, 2001

Don Bates
JWARS Office

Web Site: https://www.jointmodels.mil/jwars

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

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1. REPORT DATE (DD-MM-YYYY)	2. REPORT TYPE	3. DATES COVERED (FROM - TO)
30-05-2001	Briefing	xx-xx-2001 to xx-xx-2001

4. TITLE AND SUBTITLE
Joint Warfare System (JWARS) Update to the Executive Forum on Modeling and Simulation
Unclassified

5a. CONTRACT NUMBER
5b. GRANT NUMBER
5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
Bates, Don ;

5d. PROJECT NUMBER
5e. TASK NUMBER
5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME AND ADDRESS
JWARS Office
xxxxx, xxxxxxx

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME AND ADDRESS
OSD
,

10. SPONSOR/MONITOR'S ACRONYM(S)
11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
APUBLIC RELEASE
,

13. SUPPLEMENTARY NOTES

14. ABSTRACT
Mission: Develop a state-of-the-art, constructive simulation that will: ? Provide a multi-sided and balanced representation of joint theater warfare ? Be able to assess current and future operational concepts to include Joint Vision 2010?s: Dominant Maneuver, Precision Engagement, Focused Logistics, and Full- Dimension Protection ? Use C4 and ISR as the foundation for how entities perceive and interact with one another

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19. NAME OF RESPONSIBLE PERSON
			Public Release	22	Fenster, Lynn lfenster@dtic.mil
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			19b. TELEPHONE NUMBER International Area Code Area Code Telephone Number 703767-9007 DSN 427-9007

Agenda

- **Background**
- **Management**
- **Technical Overview**
- **Schedule**

History

Calendar Year

1995 | **1996** | **1997** | **1998** | **1999**

JWARS Operational Requirements Document (ORD) was approved by Joint Requirements Oversight Council (JROC).

DepSecDef designated Joint Data Support (JDS) as primary data support agency for JAMIP.

Deputy Secretary of Defense (DepSecDef) initiated Joint Warfare System (JWARS) development as one component of Joint Analytic Model Improvement Program (JAMIP).

Prototype Development

Production Development

Mission

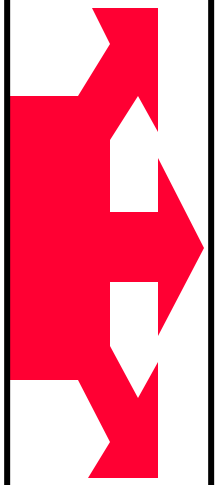
Mission: Develop a state-of-the-art, constructive simulation that will:

- ***Provide a multi-sided and balanced representation of joint theater warfare***
- ***Be able to assess current and future operational concepts to include Joint Vision 2010's:***

  Dominant Maneuver, Precision Engagement, Focused Logistics, and Full-Dimension Protection
- ***Use C4 and ISR as the foundation for how entities perceive and interact with one another***

Users

- **Joint Staff**
- **Services**
- **CINCs**
- **OSD**
- **Joint Task Forces**
- **Other DoD org's**
- **Industry**



Applications

1. **Force assessment**
2. **Planning and execution**
   - ***Deliberate planning***
   - ***Crisis action planning***
3. **System effectiveness and trade off analysis**
4. **Concept and doctrine development and assessment**

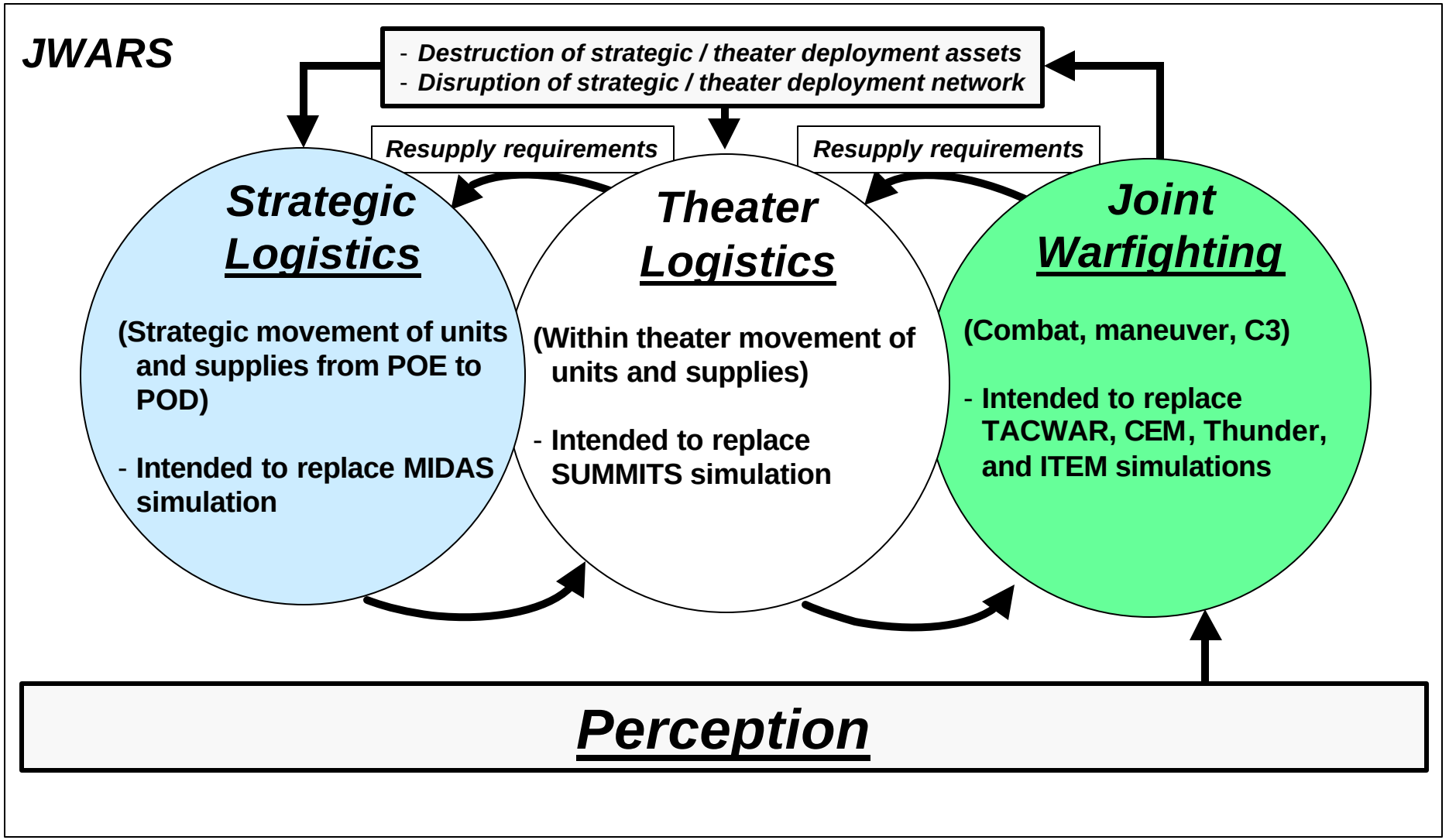
Requirements - Warfare Functionality

(slide 1 of 2)

- **Release 1 (Limited IOC)**
  - **Include C4, ISR, logistics, and essential functionality in legacy simulations TACWAR and MIDAS.**
  - **Be capable of replacing TACWAR for force assessment application.**
- **Release 2 (Full IOC)**
  - **Provide balanced warfare representation, including C4, ISR, logistics.**
  - **Be capable of supporting the applications--**
    1. **Force assessment.**
    2. **Planning and execution.**
  - **Be capable of replacing TACWAR and MIDAS.**
- **Release 3 (FOC)**
  - **Provide balanced warfare representation, including C4, ISR, logistics.**
  - **Be capable of supporting the applications--**
    1. **Force assessment.**
    2. **Planning and execution.**
    3. **System effectiveness and trade-off analysis.**
    4. **Concept and doctrine development and assessment.**
  - **Be capable of replacing legacy simulations CEM, Thunder, ITEM, and SUMMITS.**

Requirements - Warfare Functionality

(slide 2 of 2)



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JAMIP Management

- Overall guidance
- Decision authority

Executive Committee

- Routine guidance

Steering Committee

Near-Term Enhancements
Joint Staff / J-8 lead

JWARS
PA&E lead

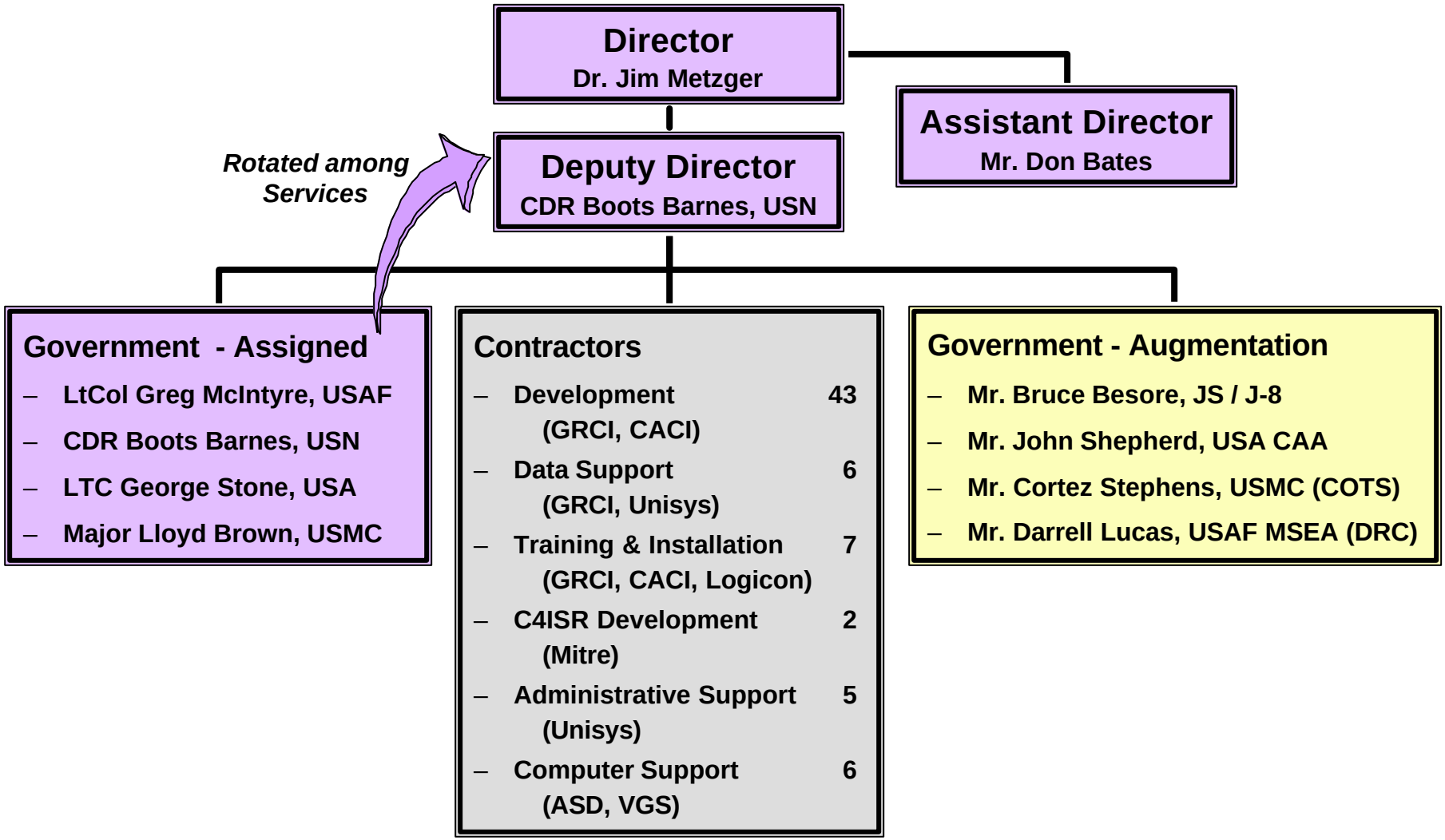
Joint Data Support
PA&E lead

Field Support
Joint Staff / J-8 lead

JWARS Requirements Integrated Product Team (IPT) and Joint Warfare Refinement Group
Joint Staff / J-8 lead

JWARS Office

Integrated Government-Contractor Facility (Arlington, VA)



Collaborative Development Process

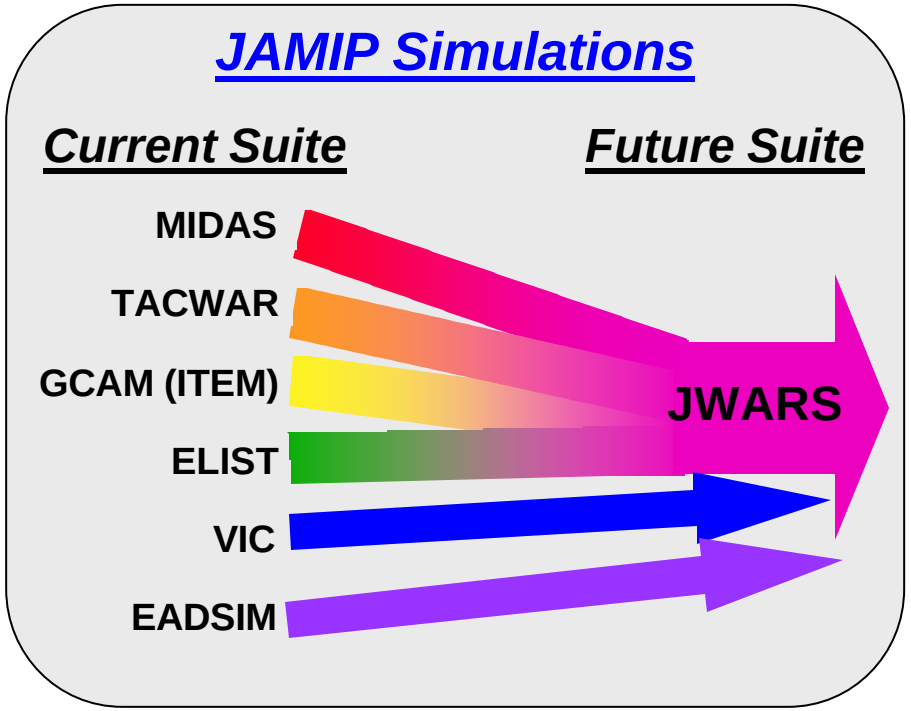
- **Activities**
  - Requirements definition and refinement → JS/J-8 (SAMD, WAD)
  - Design and implementation
  - Data development
  - Verification and validation → V&V Agent (Oct 97- Present)
  - Test and evaluation → OT&E by ATEC and AFOTEC
    - ATEC is Lead Test Agency
  - Training and installation
- **Participants**
  - JWARS Office
  - Joint Data Support (JDS)
  - Future users
    - ✓ Joint Staff
    - ✓ OSD
    - ✓ Services
    - ✓ CINCs

JWARS Study Team (JST)
- Created in 1999
- Group of future users

Joint Data Support (JDS)

Charter: Improve the Quality and Consistency of DoD Analyses

- **Provide and manage data for DoD analytical studies**
  - ***Broad customer base (Joint Staff, Services, CinCs, OSD)***
  - ***Supporting***
    - **Studies using JAMIP simulations (e.g., MRS-05)**
    - **Studies using other decision support processes (e.g., Dynamic Commitment)**
- ***Support JWARS development and fielding***



JWARS V&V and T&E

Verification and Validation (V&V)

- **Activities (described later) performed during development by JWARS V&V Agent, users, and subject matter experts**
- **Documented by JWARS V&V Agent**

Test and Evaluation (T&E)

- **Developer testing - by development contractor for JWARS Office**
  - ***During development***
  - ***Prior to each release***
- **External testing - by selected user sites, at each of Limited IOC, Full IOC, and FOC.**
  - ***Beta testing***
  - ***Operational Test and Evaluation (OT&E)***

Release 1 Test and Evaluation

Objective

- Ensure that ORD requirements are satisfied

Process

- Installation and training for user test sites
- Beta testing by user test sites
- Operational testing by user test sites, overseen by Services' Operational Test Agencies (Army lead)

Participating user sites

ODPA&E (SAC)	JS (J-8)	USAF (AFSAA)	USA (CAA)
USN (N81)	USMC (MCCDC)	USCENTCOM	USSOCOM
USTRANSCOM	USPACOM	USFK	

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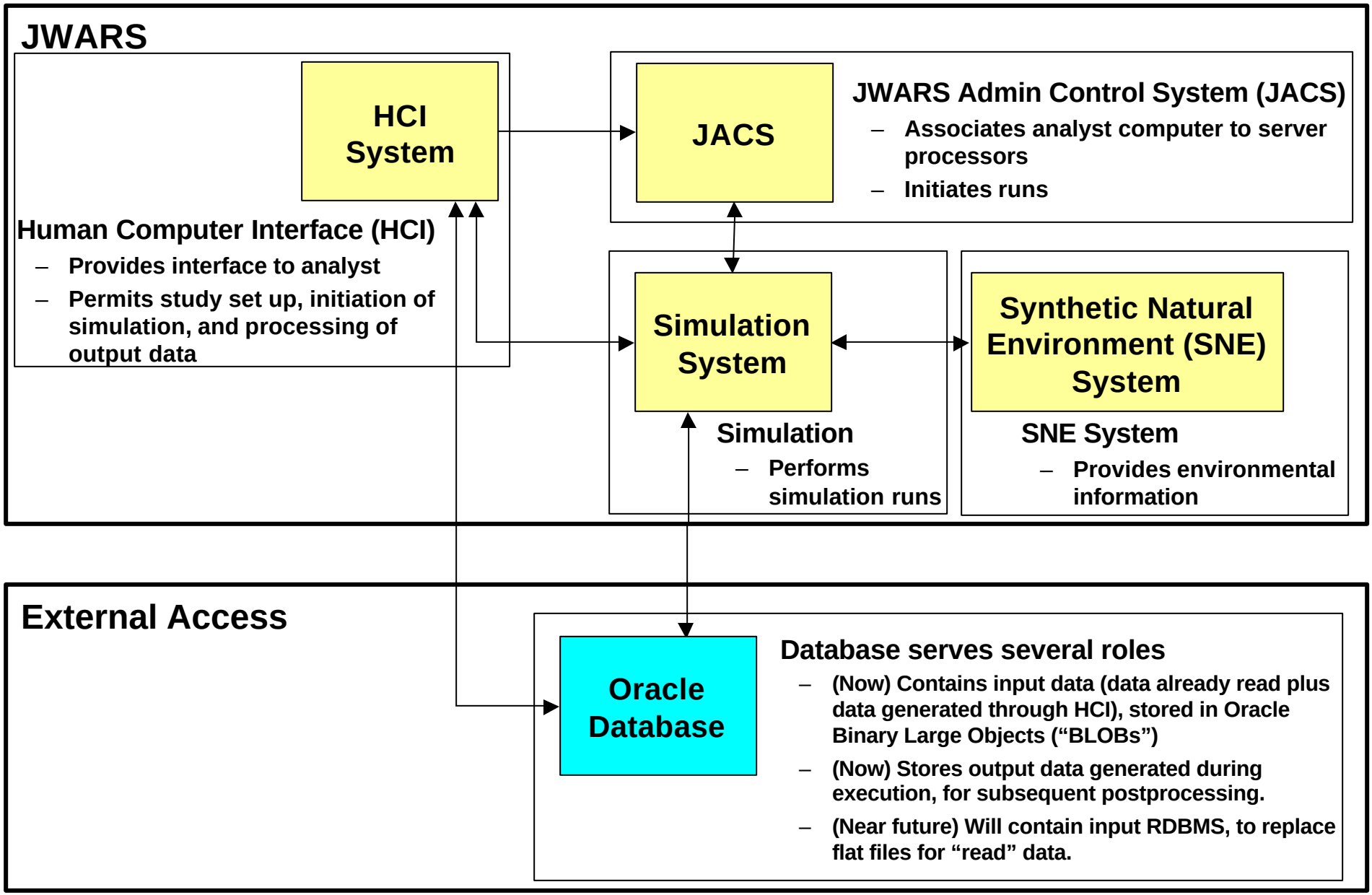
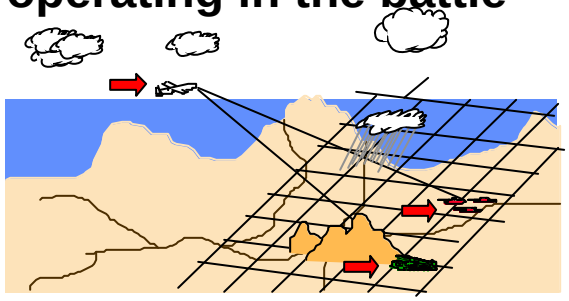
JWARS Architecture - System View

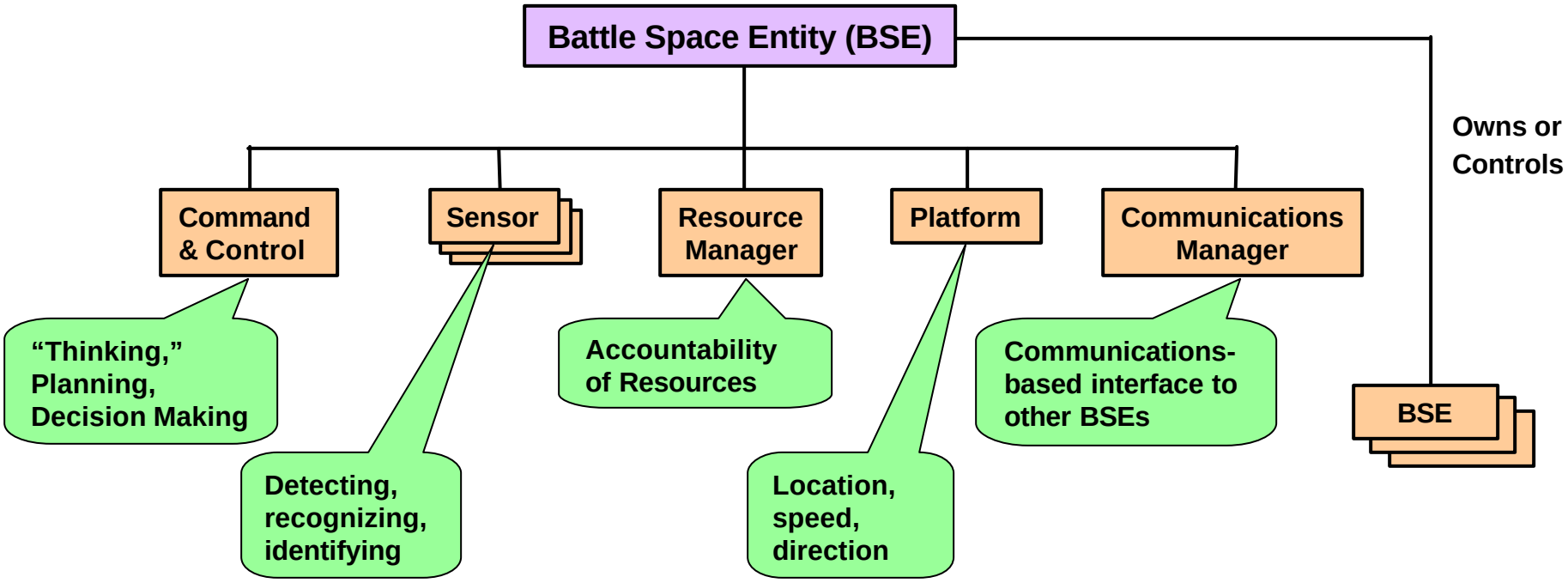


Fundamental Component --
Battle Space Entity (BSE)

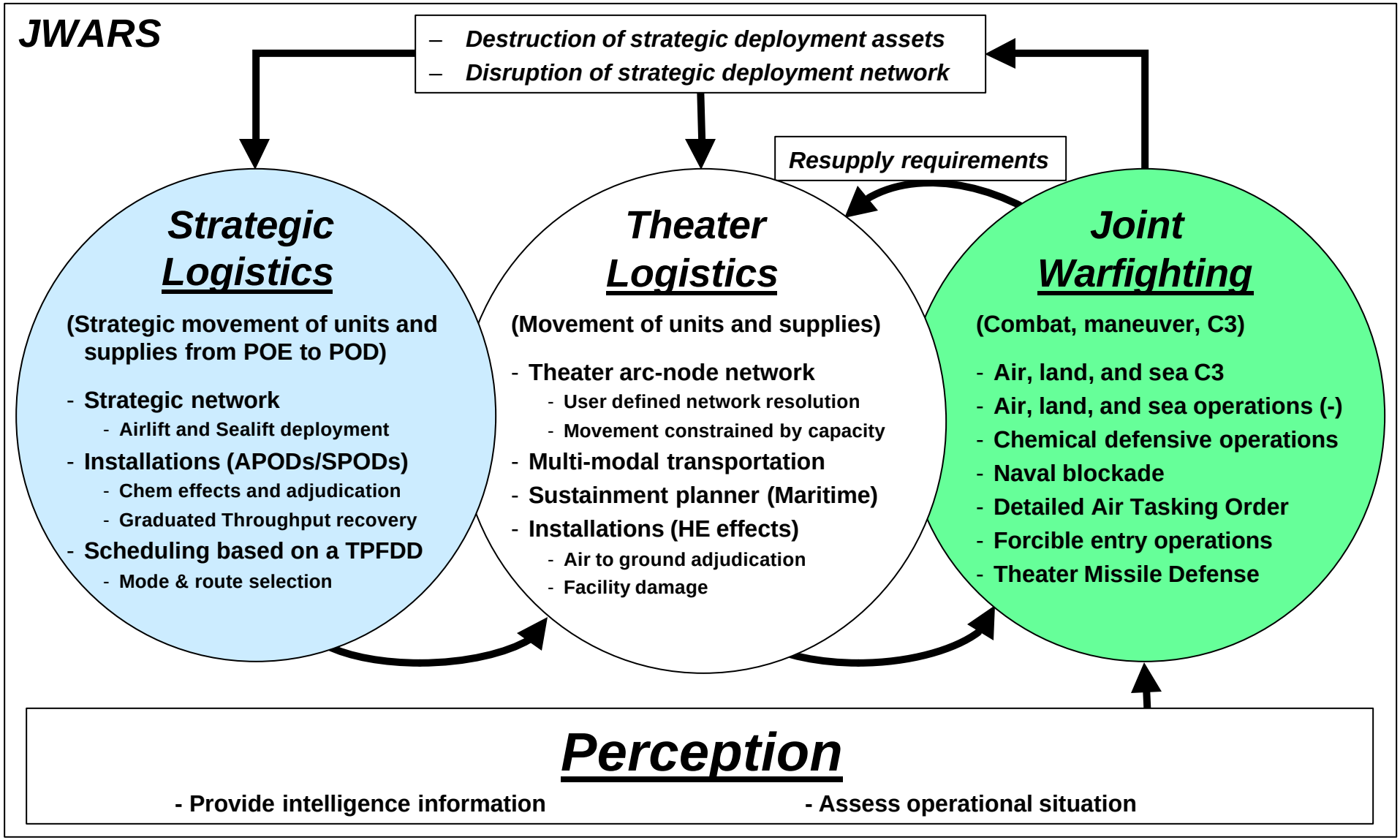
- **BSE -- a friendly unit, enemy unit, or major system operating in the battle space. Examples:**
  - Operational Headquarters
  - Strategic aircraft and ships
  - Airbases and seaports
  - Land: Maneuver Battalion
  - Air: Air Mission Element
  - Space: Sensor Satellite
  - Maritime: Ship, Submarine



- **Represented as a "composite software object." Top-level decomposition:**



Release 1 Warfare Functionality - Summary



Release 1.3 Warfare Functionality - Summary

Major module	Functionality	Release 1.3 content
Strat. Deployment	Strategic flow from POE to POD	simulated in playbox only
	Strategic network	Ö
	Air and sea PODs	basic [1]
Theater Trans & Logistics	Integrate units into theater	Ö
	Intratheater network	Ö
	Logistics distribution	yet to be implemented
Perception	Provide intelligence information	Ö
	Assess operational situation	Ö
	Communicate	Ö
Operations	Command and control	Ö (theater, land, air, maritime)
	Air Tasking Order	Ö [2]
	Interdiction and counter air	basic [2]
	Maritime warfare	SUW, USW, blockade [3]
	Land warfare	basic [4]
	Firepower and close air support	Ö
	Theater ballistic missile defense	basic [2]
	Suppression of enemy air defense	yet to be implemented
	Chemical defense	Ö
	Forcible entry	Ö

Notes:
1. More detailed representations of APOD and SPOD operations will be incorporated in Release 2.
2. Representations of Integrated Aerospace Defense and Airspace Control remain to be incorporated in Release 2.
3. Countermine operations remain to be incorporated in Release 2.
4. Mobility/countermobility operations remain to be incorporated in Release 2.

Agenda

- **Background**
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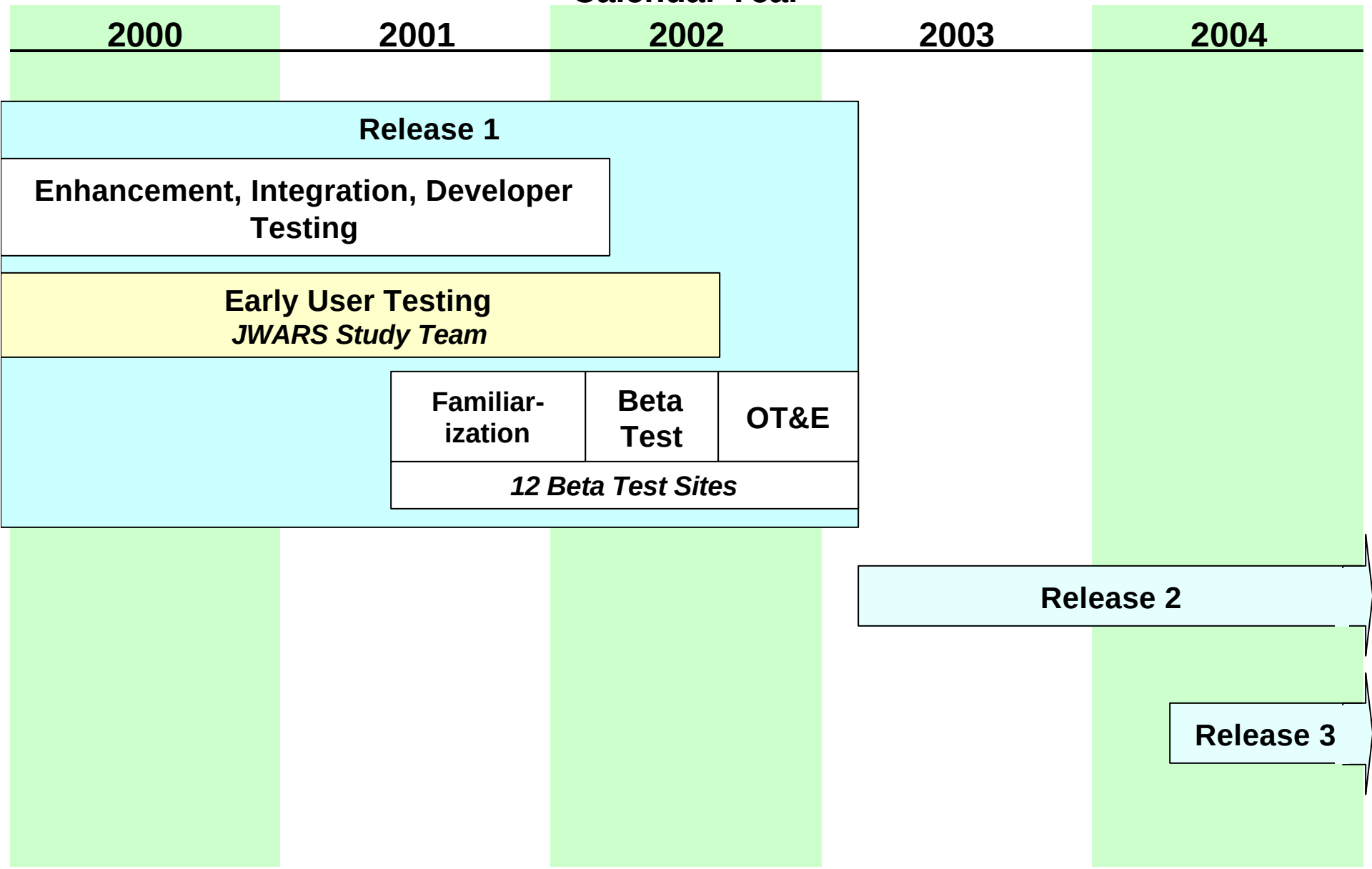
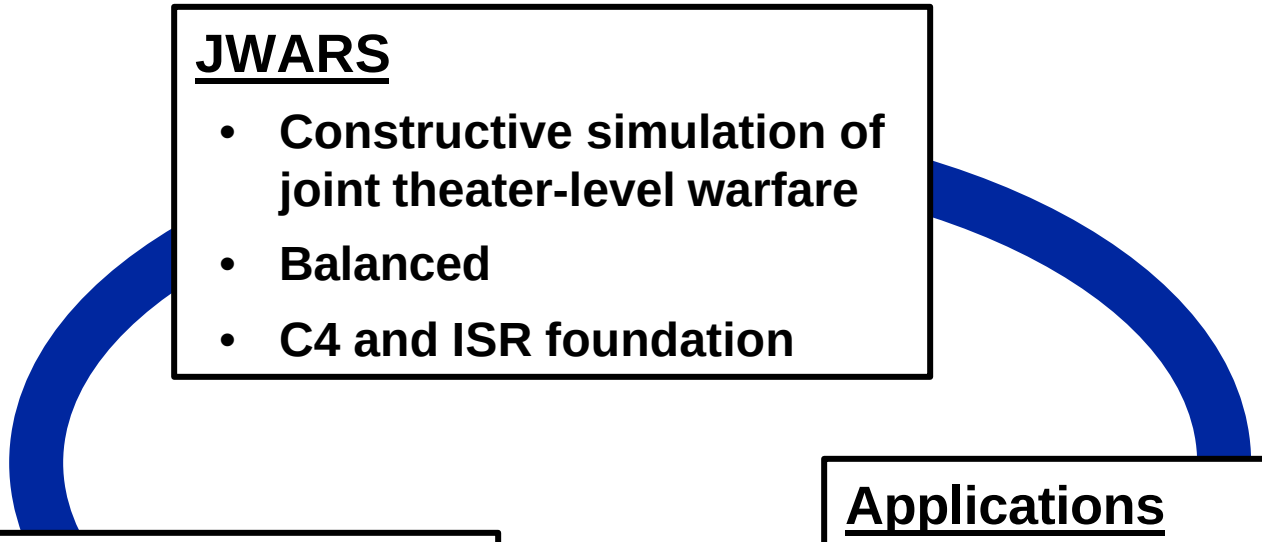
Macro Schedule



Near Term Schedule

- **Release 1.3**
  - **Developer Testing completed in April 2001**
  - **Training and Installation began in May 2001**
  - **Distribution to requesting Beta Test sites for familiarization**
- **Release 1.4**
  - **Will include warfare functionality of Limited IOC**
  - **Completion date: *to be determined* date in 2002**
    - **Affected by possible assessments by JWARS Study Team**
  - **Distribution to Beta Test sites for Beta Testing**
- **Release 1.5**
  - **Will include changes resulting from Beta Testing**
  - **Estimated date: *to be determined* date, dependent on Release 1.4**
  - **Distribution to Beta Test sites for OT&E**

JWARS Payoff - Improved Analytic Support



JWARS

- Constructive simulation of joint theater-level warfare
- Balanced
- C4 and ISR foundation

Users

- Joint Staff
- Services
- CINCs
- OSD
- Joint Task Forces
- Other DoD organizations
- Industry

Applications

1. Force assessment
2. Planning and execution
   - Deliberate planning
   - Crisis action planning
3. System effectiveness and trade off analysis
4. Concept and doctrine development and assessment